

WHAT IS CLAIMED IS:

1. An aqueous primer composition for adhering a photosensitive resin layer to an underlying substrate in the manufacture of flexographic printing plates, the aqueous primer composition comprising:
 - a) a binder;
 - b) a copolymer or monomer;
 - c) a layered silicate;
 - d) optionally, a surfactant; and
 - e) optionally, a dye or pigment.
2. The aqueous primer composition according to claim 1, wherein the binder comprises a polyurethane.
3. The aqueous primer composition according to claim 2, wherein the concentration of the polyurethane in the aqueous primer composition is about 25% to about 75% by weight based on dry content.
4. The aqueous primer composition according to claim 1, wherein the copolymer is an acrylic ethylene acid copolymer.
5. The aqueous primer composition according to claim 4, wherein the concentration of the copolymer in the aqueous primer composition is about 5% to about 40% by weight based on dry content.
6. The aqueous primer composition according to claim 1, wherein the layered silicate is selected from the group consisting of phyllosilicates, micaceous minerals, mixed layered illite/smectite minerals, and combinations of the foregoing.
7. The aqueous primer composition according to claim 6, wherein the layered silicate is a phyllosilicate and is selected from the group consisting of montmorillonite, bentonite, nontronite, biedellite, volkonskonite, hectorite, saponite, sauconite, sobockite, stevensite, svinfordite, vermiculite, and combinations of the foregoing.

8. The aqueous primer composition according to claim 7, wherein the layered silicate is a montmorillonite selected from the group consisting of sodium montmorillonite, calcium montmorillonite, magnesium montmorillonite, and combinations of the foregoing.
- 5 9. The aqueous primer composition according to claim 6, wherein the concentration of the layered silicate in the aqueous primer composition is about 1% to about 10% by weight based on dry content.
- 10 10. The aqueous primer composition according to claim 1, wherein the layered silicate is pre-mixed with water before being added to the aqueous primer composition.
11. The aqueous primer composition according to claim 1, wherein the surfactant is a non-ionic surfactant.
- 15 12. The aqueous primer composition according to claim 11, wherein the surfactant is present in the aqueous primer composition at a concentration of about 0.5% to about 5% by weight based on dry content.
- 20 13. The aqueous primer composition according to claim 12, wherein the surfactant is pre-mixed with water and a rheology modifier being added to the aqueous primer composition.
14. A method of preparing an aqueous primer composition comprising the steps of:
- 25 a) preparing an aqueous surfactant pre-mixture comprising a non-ionic surfactant and deionized water;
- b) preparing a layered silicate dispersion comprising the layered silicate and water; and thereafter
- c) preparing an aqueous primer composition by mixing, in order:
- 30 i) a binder;
- ii) a copolymer or monomer;
- iii) the layered silicate dispersion;
- iv) the surfactant pre-mixture; and
- v) optionally, a dye or pigment.

15. The method according to claim 14, wherein the binder comprises a polyurethane.
16. The method according to claim 15, wherein the concentration of the polyurethane
5 in the aqueous primer composition is about 25% to about 75% by weight based on dry content.
17. The method according to claim 14, wherein the copolymer is an ethylene acrylic acid copolymer.
- 10 18. The method according to claim 17 wherein the concentration of the copolymer in the aqueous primer composition is about 5% to about 40% by weight based upon dry content.
- 15 19. The method according to claim 14, wherein the layered silicate is selected from the group consisting of phyllosilicates, micaceous minerals, mixed layered illite/smectite minerals, and combinations of the foregoing.
- 20 20. The method according to claim 19, wherein the layered silicate is a phyllosilicate and is selected from the group consisting of montmorillonite, nontronite, biedellite, volkonskonite, hectorite, saponite, sauconite, sobockite, stevensite, svinfordite, vermiculite, and combinations of the foregoing.
- 25 21. The method according to claim 20, wherein the layered silicate is a montmorillonite and is selected from the group consisting of sodium montmorillonite, calcium montmorillonite, magnesium montmorillonite, and combinations of the foregoing.
- 30 22. The method according to claim 14, wherein the concentration of the layered silicate in the aqueous primer composition is about 1% to about 10% by weight based on dry content.

23. The method according to claim 14, wherein the concentration of the surfactant in the aqueous primer composition is about 0.5% to about 5% by weight based on dry content.
- 5 24. The method according to claim 14, wherein the layered silicate dispersion is mixed into the aqueous primer composition through high shear mixing.
25. A method of adhering a photopolymer resin to an underlying substrate, the method comprising the steps of:
- 10 a) coating an aqueous primer dispersion onto the substrate, wherein the aqueous primer comprises:
- i) a binder;
 - ii) a copolymer or monomer;
 - iii) a layered silicate;

15 iv) optionally, a surfactant; and

 - v) optionally, a dye or pigment; and
- b) adhering a photopolymer resin to the primed substrate.
26. The method according to claim 25, wherein prior to step a), the substrate is
- 20 pretreated with an adhesion promoting composition.
27. The method according to claim 25, wherein the binder comprises a polyurethane.
28. The method to claim 27, wherein the concentration of the polyurethane in the
- 25 aqueous primer composition is about 20% to about 75% by weight based on dry content.
29. The method according to claim 25, wherein the copolymer is an ethylene acrylic acid copolymer.
- 30 30. The method according to claim 28, wherein the concentration of the copolymer in the aqueous primer composition is about 5% to about 40% by weight based on dry content.

31. The method according to claim 25, wherein the layered silicate is selected from the group consisting of phyllosilicates, micaceous minerals, mixed layered illite/smectite minerals, and combinations of the foregoing.
- 5 32. The method according to claim 31, wherein the layered silicate is a phyllosilicate and is selected from the group consisting of montmorillonite, nontronite, biedellite, volkonskonite, hectorite, saponite, sauconite, sobockite, stevensite, svinfordite, vermiculite, and combinations of the foregoing.
- 10 33. The method according to claim 32, wherein the layered silicate is a montmorillonite and is selected from the group consisting of sodium montmorillonite, calcium montmorillonite, magnesium montmorillonite, and combinations of the foregoing.
- 15 34. The method according to claim 31, wherein the concentration of the layered silicate in the aqueous primer composition is about 1% to about 10% by weight based on dry content.
- 20 35. The method according to claim 25, wherein the layered silicate is dispersed in water and the dispersion is then added to the aqueous primer composition.
- 25 36. The method according to claim 35, wherein the layered silicate dispersion is mixed into the aqueous primer composition through high shear mixing.
- 30 37. The method according to claim 25, wherein the surfactant is a non-ionic surfactant.
38. The method according to claim 35, wherein the concentration of the surfactant in the aqueous primer composition is about 0.5% to about 5% by weight based on dry content.
39. The method according to claim 38, wherein the surfactant is pre-mixed with a rheology modifier and water before being added to the aqueous primer composition.

40. The method according to claim 25, wherein the substrate is formed from a transparent or opaque material, wherein said material is selected from the group consisting of paper, cellulosic films, polymers and metals.
- 5 41. The method according to claim 35, wherein the aqueous primer dispersion is coated onto the substrate by roll coating, brush coating, or spray coating.